

Chapter 2: Understanding cells

This chapter explains how you can use cells to create your application. It presents an overview of the basic functions of the cell. (A complete description of each cell type appears in Chapter 7.)

There are two things about cells you need to remember:

- All cells have a common structure.
- Meridian IVR has many cells from which you can choose when you build an application.

Components of a cell

As mentioned before, cells are the basic building blocks of an application. There are six components of a cell:

- cell type
- cell name
- cell number
- parameters
- next cells
- tables

Cell type

Each cell has a cell type that determines the kind of activity the cell performs, such as answering a phone call or playing a message. The cell type determines the basic framework for building a cell. When you want to create a cell, you choose a cell type to establish its basic characteristics, then customize it as necessary. You can select from a variety of cells to create your application.

Cell name

When you create a new cell for your application, Meridian IVR automatically supplies the default cell name, *Untitled*, that you can and should change. It is important to choose a meaningful name for each cell so that you remember what each cell does.

Cell number

The cell number is used for identification and error tracking. Each new cell is assigned a cell number identifying the order in which it was created. The first cell is #1, the next is #2, and so forth. You can see the cell numbers when you print your application, or when you access the “dapple” utility, which is executed through the UNIX shell window, or the application editor. Refer to the *Meridian IVR Maintenance and Diagnostics Guide* (555-9001-500) for more information on this utility.

Parameters

For each cell type, there is a set of parameters to determine exactly how the cell performs its functions. The PLAY cell type is used to play one or more prompts to a caller. The following shows the list of parameters for the PLAY Prompts cell type.

Parameters for the PLAY cell type

Parameter	Initial value	Explanation
Call Audit Enabled?	No	Determines if this cell logs the following information to the call audit statistics file (audit_stat.d): Application Name Cell Name Cell Number Date and Time of Cell Execution Contents of the Cell Comment Field Contents of the Call Audit Information buffer
Call Audit Information	DIGITS	When you enable Call Auditing, the Call auditing Process logs the content of this buffer to the audit_stat.d file.
Number of Prompts (max 32)	1	This value is updated automatically once the cell is saved with the count of the number of prompts entered in the Prompt Table. Note: If a buffer instead of a value is entered, the value in the buffer will indicate the number of prompts to play when the cell is executed in an application.

When you create a cell, it is supplied with predetermined initial values for its parameters. For example, when you first create a PLAY cell, it has a value of 1 for its Number of Prompts parameter. The initial values provided for each parameter are reasonable values which you are likely to use; they help you save time when building an application.

If a parameter's initial value is not what you want, you can easily change it. Making changes to parameter values is one of the steps you take when customizing the cell.

Next cells

For each branch in a cell, you select a next cell which is the cell that follows if the application takes that particular branch. For example, the PLAY cell has two next cell branches called “Error” and “Success.” The application takes the Error branch if the PLAY cell cannot play the designated prompts. It takes the Success branch if the PLAY cell plays the prompts.

When you create a cell, it has initial values for each of its next cells, just as it has initial values for each parameter. The initial value for each next cell, however, is always Cell 1. In most cases, you select some other value because every cell cannot branch to Cell 1. For this reason, we recommend that you use the HANG Cell as the first cell when you create your application to avoid unusual results, in case you forget to change the next cell default somewhere in your call flow. Changing the initial next cell values is another step in customizing the cell.

Tables

Some cells require tables of information. For example, the PLAY cell can play up to 32 prompts to a caller. Because you must indicate which prompts you want the PLAY cell to play, it has the Play Prompt Table, where you can list the prompts. Like parameters and next cells, tables have initial values. As a further step in customizing the cell, you can change the initial table values, if necessary

Cell categories

Cells are categorized according to their main function. The categories include: prompt, outdial, buffer manipulation, call management, application scheduling, user function, execute application, subroutine, message manipulation, and database cells.

Audiotext cells

Audiotext cells contain prompts that guide callers through an application. These first two cells play prompts and solicit input from the caller.

Play Prompts and Get Data (GDAT)

Plays one or more prompts and collects information from the caller. For example, a GDAT cell can play the prompt (for example, “Please enter your password”) when the caller supplies the password by pressing telephone keys. GDAT automatically collects the digits and stores them in a buffer.

Play Menu and Get Data (MENU)

Plays a menu to the caller (for example, “Press 1 to save this message. Press 2 to review it. Press 3 to delete it”). When the caller presses a digit, MENU branches to a cell that performs the activity that the caller chooses.

The next two cells only play prompts.

Play Prompts with Data (PDAT)

Takes a number from a buffer and reads it to the caller. PDAT can read the number in any of the following formats: a date, a time, a date and time, a number, or a series of digits. For example, if the format for “1234” is number, PDAT plays a series of system prompts that say “One thousand, two hundred thirty-four”. If the format for “1234” is digits, PDAT reads this number as “one two three four.”

Play Prompts (PLAY)

Plays one or more prompts to the caller (for example, “Hello. Thank you for calling XYZ Corporation”).

Call management cells

These cells help to manage phone calls and are generally used to begin or end a call.

Answer (ANSW)

Answers a telephone call.

Hang Up (HANG)

Ends a call by hanging up the channel.

Get Call Information (INFO)

Gets detailed information on either incoming or outgoing calls.

Call Progress Detection (PRGS)

Gets the termination state of the previous outdial attempts by COUT and DOUT cells.

Data manipulation cells

Buffers store information and pass it from one cell to another. Many cells use the information that is stored in named buffers, but only data manipulation cells are designed specifically to allow you to access buffers directly.

User defined matching criteria (CASE)

Compares the contents of a buffer to a selection of predefined criteria, and passes the control to the branch that meets the criteria.

Convert data (CDAT)

Converts data from one format to another by allowing you to specify the input format, output format, source buffer, and destination buffer.

Compare (COMP)

Makes a numerical or string comparison of either the contents of one buffer or a constant value against the contents of another buffer. It branches according to the results of the comparison: if the contents are equal, the buffer branches to an equal cell, or else it branches to the greater than or less than cell. COMP also provides a mechanism for looping within an application.

Concatenate Buffers (CONC)

Joins the contents of one buffer to the contents of another buffer, and puts the result into the second buffer.

Log Application Event (EVENT)

Logs application-specific information at arbitrary points within a call flow as directed by the application writer.

Perform Mathematical Operation (MATH)

Performs a mathematical operation (for example, add, subtract, multiply, divide, or remainder) on two operands that are either buffers or constants.

Store (STOR)

Puts either a value or contents of a buffer into another buffer.

Substring Buffers (SUBS)

Copies a portion of a string and puts the copy into a buffer.

Access user function cells

You can use these cells to obtain call information, address and deposit messages in Meridian Mail mailboxes, and detect the state or progress of a call.

Address Message (ADDR)

Addresses messages by the Meridian mailbox numbers.

Send Message (MSG)

Sends previously recorded and addressed messages.

Execute application cells

An EXEC cell in an application makes another application begin running in place of the current one. EXEC makes it possible to break a large application into several smaller ones. When a call is received, it can be answered by an application that determines which of the several other applications should take the call. An EXEC cell can then turn the call over to the appropriate application.

Execute Application (EXEC)

Begins the execution of another Meridian IVR application on the current channel. Once the new application begins, it takes control of the current call and the old application stops running.

Call a Subroutine (GSUB)

Redirects execution to a new cell in either the current application or another application. The GSUB cell works similarly to the EXEC cell except that you can return to the calling application by using the RETN cell.

Return from a Subroutine Call (RETN)

Returns control after processing a GSUB cell to the GSUB cell's next cell.

Fax response cells

These cells allow an IVR application to send and receive faxes.

Call back fax (CFAX)

Queues a Call Back fax to be sent to a specified phone number.

Data file create/concatenate (DCAT)

Performs data manipulation on files and buffers.

Data file delete (FDEL)

Deletes one or more files.

Receive fax (FRCV)

Transfers control to a fax modem to perform a Same Call receive from the caller.

Fax modem release (FRLS)

Attempts to release a fax modem that was previously reserved by FRSV. Depending on its success at releasing the fax modem, the cell is followed by either a success branch, or the error branches “bad id” or “fax down.”

Fax modem reserve (FRSV)

Attempts to reserve a fax modem for use in either a Same Call send or a Same Call receive. Depending on its success at reserving a modem, the FRSV cell is followed by either a success branch, or the error branches “no modems” or “fax down.”

Send fax (FSND)

Transfers control to a fax modem to perform a Same Call send to a caller.

Host communication cells

These cells add host communication support.

Host Communication Abort (COMA)

Aborts a transaction that is currently in progress from a host computer connected to Meridian IVR through the application developer.

Input to host (COMI)

Passes data to a host computer connected to Meridian IVR and initiates a transaction through the application developer.

Output to host (COMO)

Retrieves data from a host computer connected to Meridian IVR and initiates a transaction through the application developer.

Outdialing cells

So far, we have discussed only applications that receive telephone calls. Meridian IVR can also originate calls through the following outdial cells:

Continuation Outdial End (CEND)

Ends a secondary call originated by a Continuation Outdial (COUT) cell. CEND can end the call in one of these ways: CEND can hang up the secondary call and resume the original phone call, or join the two callers together in a conference call using the Meridian voice channel.

Continuation Outdial (COUT)

Places the caller on hold, then makes a secondary call on the same channel. This secondary call is ended by a Continuation Outdial End (CEND) cell.

Dial Digits (DIAL)

Dials DTMF digits during a call that is already in progress. This is useful for sending digits to an external device such as a paging terminal.

Directed Outdial (DOUT)

Allows an application to originate a phone call. After it dials, it checks to see if the call is answered and branches accordingly. You can use this cell in your application to deliver faxes and make wake-up or reminder calls.

Supervised Call Transfer (SXFR)

Makes a phone call for a caller who is already connected to Meridian IVR. SXFR dials the second party's phone number, transfers the original caller to the new call, then releases both parties. This cell differs from the XFER cell because if the transfer is unsuccessful, the application takes an error branch and continues with the current caller.

Transfer Outdial (XFER)

Makes a phone call for a caller who is already connected to Meridian IVR. XFER dials the second party's phone number, transfers the original caller to the new call, then releases both parties.

Application scheduling cells

You can use these cells to schedule applications to run at a specific time. While you can schedule any kind of application, these cells are particularly useful for wake-up and reminder calls.

Schedule Application Delivery (DELV)

Schedules an application to run at a specified time. You can schedule the application to run several times.

Get Schedule Event List (LDLV)

Retrieves information about a scheduled event.

Get Meridian Mail Date and Time (MDTE)

Gets the date and time as they are set in Meridian Mail.

Get Current Date and Time (TIME)

Gets the current date, time, and day of the week as maintained by the UNIX operating system on the application module.

Unscheduled Delivery (UDLV)

Cancels a scheduled event.

User function cells

User functions, which are customized code written in the “C” programming language, can be used to extend the range of activities performed by Meridian IVR. This cell type interfaces a user function to an application.

Connect User Function (USER)

Acts as a bridge between a user function and an application.

Message cells

These cells enable you to record and manipulate messages from callers. The message itself is not in the CURRENT MESSAGE buffer. The buffer contains a reference to the message (for example, the message ID).

Delete Message (DMSG)

Deletes the message referenced in the CURRENT MESSAGE buffer.

Play a Message (PMSG)

Plays the message referenced in the CURRENT MESSAGE buffer.

Record Message (RMSG)

Lets the caller record a message. The message identification number is stored in the CURRENT MESSAGE buffer.

Local database cells

You can use the database cells to access data stored in a Meridian IVR information database.

Check Database (CHEK)

Checks an information database for a record associated with a particular record number and retrieves the corresponding data.

Delete Records from an Information Database (DDEL)

Allows you to delete a record from an information database.

Insert record into an Information Database (DINS)

Allows you to insert a record in an information database.

Update Information Database (UPDT)

Allows you to insert data in an information database. You can insert up to ten buffers of data in a record.

Multilingual cell

The following cell allows Meridian IVR to support multiple languages.

Set Language (LANG)

Sets the offset for system- and application-specific prompts, and associates the offset with a particular language. You can use this cell to support multilingual applications.

SQL server cells

The SQL server cells allow you to manipulate data stored in an SQL database.

SQL Select Count (QCNT)

Tells you how many records exist in a database table.

SQL Delete (QDEL)

Removes one or more records from a specified database table.

SQL Insert (QINS)

Adds a record to a specific database table.

SQL Select (QSEL)

Retrieves a record of data from a database table.

SQL Update (QUPD)

Updates the values in one or more records in a database table.